Department of Commerce • National Oceanic & Atmospheric Administration • National Weather Service

NATIONAL WEATHER SERVICE INSTRUCTION 10-1301
AUGUST 31, 2005

Operations and Services
Surface Observing Program (Land), NDSPD 10-13

Surface Observing (Land)

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SUMMARY OF REVISIONS: This instruction supersedes NWSI 10-1301, "Surface Observing (Land)," dated October 17, 2003. Changes are: (1) added the "Snow-Paid Observing Program;" (2) NWS staff responsible for aviation observations will use FAA Order 7900.5, Surface Weather Observations; (3) deleted Exhibit A, Designated NWS ASOS locations and Aviation Service levels; (4) clarified, station elevation is not required at COOP sites; (5) added visitations/inspections responsibilities to NWS field offices; and (6) added FAA Web link to Aviation Service Levels for augmentation/backup to ASOS.

signed August 17, 2005

Dennis H. McCarthy Date
Director, Office of Climate,
Water, and Weather Services

Surface Observing - Land

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1. General. This instruction describes surface weather observing programs at land stations staffed or managed by the National Weather Service (NWS).

2. Introduction. The surface observing program is a part of the total observation concept. The concept integrates manually observed weather observations, automated weather observations, supplementary observations from the surface observing program and data from complementary remote sensing systems. Together, these elements provide the necessary surface weather observing components to meet NWS mission requirements. The NWS utilizes the total observation concept to provide quality forecasts and warnings.

2.1 Aviation Observing Programs. NWS provides aviation observations in support of national requirements and international commitments. The NWS provides quality observations through automated means whenever possible at designated locations. At other locations aviation

observations are provided through manual methods. NWS staff responsible for aviation weather observations should provide those observations as described in Federal Aviation Administration Order 7900.5, "Surface Weather Observing."

2.1.1 Automated Surface Observing Systems (ASOS). An unattended ASOS meets all requirements to support the forecast and warning programs of the NWS. In the Alaska and Pacific Regions, NWS staff will augment and backup ASOS in accordance with the Aviation Service Levels assigned to their station. A current list of assigned service levels can be found at: http://www.avmet.com/awad/AWADReport.cfm. Augmentation and backup will be performed as an ASOS basic weather watch (see Appendix A).

2.1.2 Supplementary Aviation Weather Reporting Stations (SAWRS). The NWS will support the aviation industry through the management of the SAWRS program. Details on the operation of SAWRS are given in NWSI 10-1306, "Supplementary Aviation Weather Reporting Station Program." Observations at SAWRS are provided as described in NWS Observing Handbook No. 8, "Aviation Weather Observations for SAWRS."

2.1.3 Aviation Paid (A-Paid) and Aviation Voluntary (A-Voluntary) Observing Program. The NWS regions may fund and establish A-Paid and A-Voluntary observing stations in order to carry out their aviation forecast responsibilities. Site these stations and their equipment in accordance with NWSI 10-1302, "Instrument Requirements and Standards for the NWS Surface Observing Programs (Land)."

2.2 Synoptic Observation Program. NWS provides synoptic observations in support of national requirements and international commitments. NWS will provide observations through automated means at designated ASOS sites. At other locations synoptic observations will be provided by manual methods. NWS staff responsible for synoptic weather observations should produce the observations as described in Federal Meteorological Handbook No. 2, "Surface Synoptic Codes," i.e., (FMH-2).

2.3 Supplementary Observation Program. All NWS staffed offices and snow-paid sites provide Supplementary Climate Data (SCD) observations in support of national requirements. NWS staffed offices are encouraged to provide Supplemental Data Observations (SDO). Details on these observations are found in NWSM 10-1311, "Supplementary Observations."

2.4 Cooperative Observing Program (COOP). The NWS will provide climatological observations in support of national requirements and international commitments. The primary method of providing these observations is through the COOP. The NWS will provide observations through automated means whenever possible at designated locations. At other locations cooperative observations will be provided by manual means. Details on the cooperative program are found in NWSI 10-1307, "Cooperative Station Management."

2.5 Snow-Paid Observing Program. The NWS will establish snow-paid observing stations to meet Local Climate Data requirements. Site these stations and their equipment in accordance with NWSI 10-1302, "Instrument Requirements and Standards for the NWS Surface Observing Programs (Land)."

2.6 Other NWS Observing Programs. NWS Forecast Offices should develop local observing programs to meet national and regional forecast, warning, and verification requirements. Other NWS surface observing programs are covered in NWS Directive System policy and procedure directives pertaining to marine reporting stations, agricultural weather stations, fire weather observation stations, severe storm reporting networks.

2.7 Compensation. Paid observers are usually paid on a per observation basis. The payment rates will be determined by the regional headquarters.

3. Responsibilities of NWS Organization.

3.1 The Office of Climate, Water, and Weather Services (OCWWS) at National Weather Service Headquarters. OCWWS provides guidance and direction for the execution of the surface observation program. To carry out this responsibility OCCWS:

a. Develops requirements for surface observing programs.

b. Coordinates and negotiates with other government agencies on all national and international matters pertaining to surface observing.

c. Sets policy on surface observing matters; sets standards for accuracy and siting of weather instruments.

d. Procures, tests and deploys instrumentation for nationally supported observing programs.

e. Prepares and distributes documentation and forms for use in surface observing programs.

3.2 National Weather Service Regional Headquarters. NWS regional headquarters are responsible for implementing policy established by OCWWS. They coordinate with other government agencies at the regional level. Regions will:

a. Ensure field offices implement surface observing programs in compliance with national policy.

b. Review and approve requests of field offices to establish or close the following types of observing stations:

(1) A-Paid, A-Voluntary, and Snow-Paid.

(2) SAWRS.

(3) COOP.

c. Document agreements, and any fees, for observing services between the NWS and the observer. Use NOAA Form 36-14 for the A-Paid and Snow-Paid programs. NOAA Form 36-14 is available at: http://www.ofa.noaa.gov/~audit/noaaforms/.

d. Provide Contract Officer's Technical Representative(s) for contract observing sites.

e. Perform station visitations/inspections.

f. Notify OCWWS of suspension of any observing program.

3.3 National Weather Service Field Offices. The data provided by the surface observing programs is vital to the completion of the NWS mission. The Meteorologist In Charge (MIC) ensures personnel and resources are directed to:

a. provide and disseminate observations.

b. manage/supervise observing programs.

c. perform quality control of observations.

d. perform station visitations/inspections.

e. maintain a technical library. The library will consist at a minimum of the following:

(1) Office Of Federal Coordinator for Meteorology (OFCM) Handbooks:

(a) FMH #1, Surface Weather Observations and Reports

(b) FMH #2, Surface Synoptic Codes

(c) OFCM - Siting of Meteorological Sensors at Airports

(2) Observing Handbooks:

(a) WSOH #7 Surface Observations

(b) WSOH #8 Aviation Weather Observations for SAWRS

(c) FAA Order 7900.5 Surface Weather Observing

(3) ASOS Documentation:

(a) ASOS Software Users Manual

(b) ASOS User's Guide

(c) ASOS Ready Reference Guide

(4) Training Documentation:

(a) Training Guide in Surface Weather Observations

(b) International Cloud Atlas (abridged Atlas) or cloud chart

Appendix A - ASOS Basic Weather Watch Procedure

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1. Definition. An ASOS basic weather watch (ABWW) requires a recurring, but not continuous, evaluation of the accuracy and representativeness of the current ASOS observation. Staff performing an ABWW are not expected to detect and report all weather changes immediately as they occur.

2. Procedure for performing an ABWW. The observer will augment METAR observations in accordance with the appropriate service level standards. This includes periodically checking the current observation to determine if a SPECI has been generated requiring augmentation or backup. The observer will conduct an evaluation of the representativeness and accuracy of the current observation when advised by any reliable source the existing conditions differ from those reported.

3. Definition of Representativeness. An observation is representative if it accurately portrays the weather conditions present at the primary instrument approach. If the observation differs by reportable values, but the differences do not change operations of the airport or aircraft, then the differences are not operationally significant. The observation would continue to be representative.

Appendix B -Managing Weather Observing Programs

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1. Definition of "Observation Program." As used in this instruction, observation program refers to all station activities, equipment, schedules, and procedures related to making, recording, or disseminating the observations for which the station is responsible.

2. Procedures for Establishing Observation Sites. New sites may be established if:

   a. funds, both one-time and recurring, are available, and

   b. the Meteorologist-in-Charge or their representative has determined the location satisfies all applicable siting criteria defined in; Federal Meteorological Handbook Number 1 (FMH-1), Federal Standard for Siting Meteorological Sensors at Airports (FCM-S4-1994), and NWSI 10-1302. The site location must allow the observer to evaluate all elements within the period of the observation.

3. Procedure for Discontinuing Observation Programs Due to Station Closures. Adhere to the following procedures when a decision is made to close a station:

   a. NWS will not maintain observations at closed stations.

   b. NWS may agree to requests by others wishing to continue the observation program. In such a case, the requesting party must agree to assume responsibility for funding all costs of the program above and beyond costs incurred by NWS to provide normal support functions.

   c. If a non-Federal Government party assumes observational responsibility, all NWS owned surface observation equipment will be removed and retained by the WFO for future use or returned to the National Logistics Support Center (NLSC), Kansas City, Missouri.

4. Historical File of Surface Observation Forms. Retain corrected carbon copies of the surface observation forms on station for 90 days. After 90 days the copies may be offered to a local public library, public institution, or university, etc., capable of archiving the data for public use. If no local user can be found, the forms may be destroyed after the retention requirement has been satisfied.

5. Determination of Station Elevation (Hp). At new airport stations, Hp will be equal to the Field Elevation (Ha) rounded to the nearest foot. At non-airport stations, Hp should be equal to the height of the barometer (Hz) rounded to the nearest foot. At existing stations, Hp will be revised in accordance with the above whenever there is some other reason to issue new elevation data for the station and the difference between the old and revised Hp exceeds 50 feet. Station elevation is not required at COOP sites. Changes in Hp are made by HQ.

5.1 Preparation of Pressure-reduction Tables. HQ will prepare these tables for individual stations upon request. To obtain these tables, the following information must be provided:

a. Station name and type,

b. Field elevation (Ha), station elevation (Hp), and height of barometer (Hz), all to the nearest foot, and

c. Latitude and longitude (in degrees and minutes).

d. Average annual temperature for the station.